MICROGLIAL ANTIBODIES SIGNIFICANCE FOR ALZHEIMER'S DISEASE

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Previous investigations showing the presence of antibodies in cerebrospinal fluid (CSF) from Alzheimer's disease (AD) patients support a pathogenetic role for immunological abberations in this disorder. Paraformaldehyde (PF) fixed 2 weeks old cultures, prepared from dissociated cells from the medial septum of 18 day (E18) fetal rats, were incubated with CSF from AD patients and non-demented healthy controls. The cultures were processed for immunocytochemical observations with the avidin-biotin complex method. Only AD-CSF recognized neuronal like cells and microglia in culture. The study was extended to developing central nervous system (CNS) by using rats ranging in age from E18 through postnatal day 5. After PF fixation frozen brain sections (20μm) were incubated with CSF samples. The AD-CSF antibody recognized diverse morphological forms of amoeboid microglial cells, located mainly in the cavum septum pellucidum and corpus callosum. Electron microscopy revealed that the AD-CSF antibody recognizes specific membrane receptors in the macrophagic microglia. Furthermore AD-CSF stains activated microglia associated with ventral horn neurons undergoing lysis following unilateral injections of Ricininus communis agglutin (2μl, RCA-60 0.05%) in the sciatic nerve. Cortical neural macrophages are also stained by AD-CSF following extradural application of kainic acid over the sensorimotor cortex. The results add further support to the concept that inflammation and similar immune mechanisms may contribute to AD pathogenesis.